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On Some Changes in Nomenclature of Microlepidoptera, with Description of a New Species

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Through the courtesy of Mr. J. D. Bradley of the British Museum (Natural History), it has been possible to check certain doubtful determinations of a few of Walker's species in the Eucosminae and to establish the correct usage of these names. The present study has resulted in several changes in nomenclature, especially in the genus *Pseudexentera* Heinrich. The object of this paper is to record such changes as well as to offer description of a new species.

EUCOSMINAE

Epiblema resumptana Walker

Penthina resumptana WALKER, 1863, List of the specimens of lepidopterous insects in the collection of the British Museum, pt. 28, p. 376. HEINRICH, 1923, Bull. U. S. Natl. Mus., no. 123, p. 261 (unrecognized).

Paedisca resumptana, WALSINGHAM, 1879, Illustrations of . . . specimens of Lepidoptera Heterocera in the British Museum, vol. 4, p. 44, pl. 70, fig. 5.

Proteopteryx resumptana, FERNALD, in Dyar, 1903, Bull. U. S. Natl. Mus., no. 52, p. 464. BARNES AND McDUNNOUGH, 1917, Check list of the Lepidoptera of boreal America, p. 173, no. 7122.

Eucosma resumptana, McDUNNOUGH, 1939, Check list, pt. 2, p. 48, no. 7010.

Epiblema abbreviatana WALSINGHAM, 1879, Illustrations of . . . specimens of Lepidoptera Heterocera in the British Museum, vol. 4, p. 54, pl. 72, fig. 9. HEINRICH, 1923, Bull. U. S. Natl. Mus., no. 123, p. 155, pl. 40, fig. 255. (New synonymy.)

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Bradley states (*in litt.*) that "the type of *Penthina resumptana* Walker is a male and the genitalia are identical with those of *Epiblema abbreviatana* Walsingham (fig. 255 in Heinrich)." He further states that the two types are "identical superficially though *resumptana* is damaged and in poor condition."

The type specimen of *resumptana* was collected in Nova Scotia by Lieutenant Redman, presumably in the vicinity of Halifax. There are three specimens in the Nova Scotia Museum from localities in the Annapolis Valley (Coldbrook, Aylesford) collected by D. Ferguson in early June. The larvae are evidently feeders on *Anaphalis*, not *Solidago* as stated by Heinrich, because the moths are always found associated with this plant.

Pseudexentera cressoniana Clemens

Hedya cressoniana CLEMENS, 1864, Proc. Ent. Soc. Philadelphia, vol. 3, p. 514.

Exentera improbana, HEINRICH (*nec* Walker), 1923, Bull. U. S. Natl. Mus., no. 123, p. 174 (figs. 30, 308). McDUNNOUGH, 1939, Check list, pt. 2, p. 49, no. 7078.

Pseudexentera improbana, McDUNNOUGH, 1940, Canadian Ent., vol. 72, p. 244, fig. 1 (female genitalia). FREEMAN, 1942, Canadian Ent., vol. 74, pp. 213-214, figs. 1-6 (male and female adults).

Since the publication of Heinrich's revision of the Eucosminae (1923), the species has passed under the name of *improbana* Walker, with *diffinana* Walker as a synonym. Both types are females and were taken at St. Martin's Falls, Albany River, in northern Ontario. For some time there has been considerable doubt in the minds of Canadian entomologists as to the correctness of Heinrich's identifications. The larva is an oak-feeder, as stated by Freeman (1942), and, according to the maps in "The native trees of Canada" (1949, Bull. Dept. Mines and Resources, Canada, no. 61), the northern limits of the various oak species do not extend as far as this type locality. Bradley states (*in litt.*) that he has examined the two types and believes that they are conspecific. They are unfortunately without abdomens, although at some time or other a slide of the genitalia of *diffinana* had been made but could not be found. He further notes in regard to the venation: "... they do not have a terminal notch in the f. w. and veins 7 and 8 are not stalked. They are therefore placed in the wrong genus in Heinrich and I think they belong in *Zeiraphera*. In appearance and venation they resemble *Zeiraphera diniana* Guenée and I think they are this species." *Improbana* has been figured by Walsingham (1879, Illustrations of . . . specimens of Lepidoptera Heterocera in the British Museum, vol. 4, p.

51, pl. 72, fig. 2), and a comparison of this figure with that given by Kennel of *diniana* (1921, Die palaearktischen Tortriciden, pl. 19, fig. 27) shows a great similarity in the forewing maculation and confirms Bradley's reference. As the larva of *diniana* is a conifer-feeder, there would be no difficulty regarding the occurrence of the food plant in the type locality. Under the circumstances it would seem advisable to transfer both Walker names to the synonymy of *Zeiraphera diniana* Guenée (no. 7075 in the 1939 "Check list") and employ the name *cressoniana* Clemens for the species.

A third one of Walker's names, *destitutana*, could not be placed by Walsingham (*op. cit.*, p. 23) on account of its poor condition and was therefore not considered by Heinrich. It was doubtfully placed under *spoliaria* (no. 7080) in the 1939 "Check list." According to Bradley the type is a male without abdomen and in very poor condition, collected in the same locality as *improbana*. As far as the venation could be checked, it appeared to be a specimen of *Zeiraphera* and might be a small *diniana*. Under the circumstances it may best be placed in the synonymy of this species, as it evidently can never be satisfactorily determined with any degree of certainty.

Apriliana Grote, the type of the genus *Exentera* Grote and also placed in the synonymy of *improbana* by Heinrich, was removed in a later paper by Heinrich (1940, Canadian Ent., vol. 72, p. 242) from this association and referred to *Eucosma*, thus necessitating the erection of the new generic term, *Pseudexentera* Heinrich, with *cressoniana* Clemens designated as generotype.

Oregonana Walsingham, considered as a race of *improbana*, was established later as a good species (McDunnough, 1940, Canadian Ent., vol. 74, p. 244, fig. 2) on the strength of its distinct female genitalia. Adults were also figured by Freeman (1942, *ibid.*, figs. 13-18), and the larval food plant was designated as poplar.

The species *Sciaphila perstructana* Walker figured by Walsingham (1879, Illustrations of . . . specimens of Lepidoptera Heterocera in the British Museum, vol. 4, p. 64, pl. 75, fig. 1) was unrecognized by Heinrich (1923, Bull. U. S. Natl. Mus., no. 123, p. 260) and doubtfully placed in *Exentera* in the 1939 "Check list" (no. 7081). The type is a female, taken at St. Martin's Falls, Albany River, and, judging by a sketch of the genitalia and a note on the venation of the hind wing furnished by Bradley, should be transferred to the Laspeyresiinae. The genitalic figure shows most resemblance to the genitalia of *Laspeyresia nigricana* Stephens, but the species could not be placed definitely by the author on account of lack of material in this subfamily.

REMARKS: *Cressoniana* has not as yet been definitely recorded from Nova Scotia. A good series of a very similar but slightly smaller species has been collected in the Halifax watershed area, and a study of the genitalia of both sexes has shown only a few minor differences from those of *cressoniana*. Unfortunately very few oak trees occur in the neighborhood. However, until something definite concerning the larva and its food plant can be secured, it seems better for the present to place this series of specimens rather doubtfully under *cressoniana*.

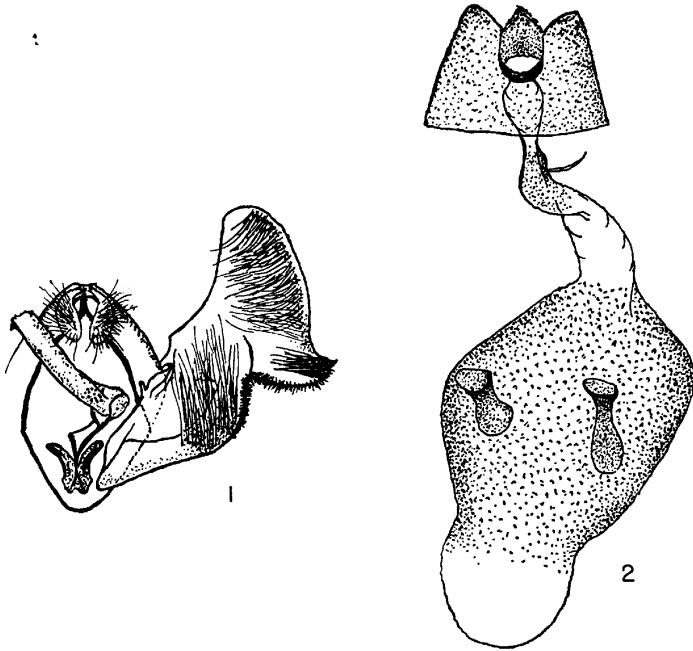
A small species of *Pseudexentera*, which occurs very commonly in the early spring in the Halifax area and along the south shore of Nova Scotia, flying around *Kalmia angustifolia* Linnaeus, is undescribed, and the following description is offered.

***Pseudexentera kalmiana*, new species**

Figures 1, 2

A small species with the usual *Pseudexentera* type of forewing maculation showing equally clearly in both sexes, although somewhat variable at times as to its distinctness.

Palpi upright, smoky outwardly, whitish inwardly; second joint with strong dorsal and ventral apical tufting; third joint short, smooth, partially concealed in the tufts of the second joint. Head rough-scaled, smoky, with some gray admixture. Antennae thin, dark, very feebly fasciculate in the male, less so in the female. Thorax smooth-scaled, smoky, with some grayish admixture; patagia short, clothed with large, smoky gray scales. Abdomen dorsally clothed with smoky scales tipped with gray, ventrally dull gray; anal tuft in male well developed, largely grayish in color. Forelegs and mid legs dull smoky, hind legs dull gray, the tarsi slightly ringed with smoky. Forewing with the large basal patch defined outwardly by a smoky band, sharply angled outwardly in the cell and slightly more prominent in the female than in the male; the basal area of the patch is paler in color, being dull grayish crossed by fine, irregular, smoky hairlines. The broad, median area between the basal patch and the postmedian dark band is light grayish in color, with a slight silvery tinge, especially in the female, to the section above the dorsum; a faint, irregular, dark, median hairline is present, as well as several short, dark dashes along the inner margin. The dark smoky postmedian band is narrow and outwardly oblique between costa and ocellus; it then broadens considerably, forming an inner border to the ocellus, and reaches the dorsum close to the anal angle of the wing. The ocellus is formed by two upright silvery bars separated by a dark area with a slight brownish tinge; its apical and



FIGS. 1, 2. Genitalia of *Pseudexentera kalmiana* McDunnough. 1. Paratype, male. 2. Allotype, female.

outer margins are bordered by a narrow, rounded, dark band, also with a brownish tinge. The basal half of the costa shows some faint, short, dark striae; beyond the postmedian band there are four evenly spaced, triangular, dark spots, separated by silvery gray areas which are bisected by dark hairlines; the outer three of these spots, as well as the hairlines, connect irregularly with the apical margin of the ocellus. A faint, dark, very thin terminal line. Fringes dull gray, tipped outwardly with smoky. Hind wings dark smoky, paling slightly basally. Fringes dull gray, cut by a dark line basally. Expanse, 13 mm.

MALE GENITALIA: Of the usual *Pseudexentera* type structurally and very similar to Heinrich's figure of those of *maracana* (fig. 313). The invagination of the ventral margin of the clasper to form the so-called neck, which separates the sacculus from the cucullus, is quite deep, with a gently rounded apex. As is characteristic for the genus the lower portion of the cucullus is curved outward, terminating in a very short and at times obsolescent spine and furnished with the usual apical cluster of long, thin spines; the lower, rounded, ventral edge bears a narrow band of short bristles which continues along the apical margin

of the sacculus as far as the usual heavy tuft of spine-like hairs. The aedeagus is moderately long and furnished with a small but quite distinct apical spine. The usual cluster of long cornuti in the vesica is generally missing in flown specimens, having been injected into the female during copulation; the small, round marks in the membrane near the base of the aedeagus are indicative of their existence.

FEMALE GENITALIA: Genital plate slightly broader than long but somewhat variable in shape. Ostium broad, rounded, and situated more or less in the median area of the plate, the position in this respect being not quite constant. Ductus bursae membranous and slightly bulbous at its inception, then narrowing and weakly sclerotized along its edges, with the ductus seminalis arising on the right side. Bending to the right it gradually widens and remains entirely membranous for a short distance before entering the bursa apically. Bursa oval, with a small, oval, distal appendage. The membrane very finely spiculate. There are the two usual sigma, more or less slipper-shaped and strongly shagreened. Owing to the different positions they assume on the individual slides, it has been impossible to determine whether they can be used as a means of specific differentiation or not.

LARVAE: Dull yellowish, with the prothoracic and anal plates tinged with smoky; very sluggish, tying the terminal shoots of *Kalmia* into a tight nest which they occupy until late July. Dropping to the ground they form small cocoons from earth and bits of rubbish, remaining quiescent until fall when they pupate. The adult is fully formed within the pupal shell before the advent of winter and emerges in the first warm days of the following spring. Several attempts to secure adults through breeding proved futile, as there is a great tendency for the imagoes to dry up in the pupal shell. A single male from larvae collected at White Point Beach, Queens County, is the sole result of these attempts.

TYPE MATERIAL: Holotype, male, White Point Beach, Queens County, Nova Scotia, March 15, 1954; bred from larva on *Kalmia* (J. McDunnough). Allotype, female, Point Pleasant Park, Halifax, Nova Scotia, May 7, 1953; taken flying around *Kalmia* (J. McDunnough). Paratypes: Ten males, May 5, 6, and 7, 1953; seven males, April 30, 1954; two females, May 5 and 6, 1953; one female, May 27, 1954. All captured flying around *Kalmia* in Point Pleasant Park, Halifax (J. McDunnough).

The holotype, allotype, and seven paratypes will be deposited in the Canadian National collection. Other paratypes will be distributed to various museum collections or remain in the author's collection.

REMARKS: Besides the type series, good series of this species have been collected in various localities in Halifax County (Purcell's Cove, Halifax watershed area, Armdale, Goodwood). A large proportion of such specimens will be deposited in the Canadian National Collection, which also contains specimens taken at Mer Bleue, Ottawa, by various members of the staff.

GELECHIIDAE

Gnorimoschema gallaeasterella Kellicott

Figures 3, 4, 5

Gelechia gallaeasterella KELLICOTT, 1897, Canadian Ent., vol. 10, p. 203, fig. 1 (*ex* gall on *Aster corymbosus*).

Gnorimoschema gallaeasteriella, BUSCK, 1903, Proc. U. S. Natl. Mus., vol. 25, p. 825; 1911, Canadian Ent., vol. 43, p. 6; 1939, Proc. U. S. Natl. Mus., vol. 86, p. 571.

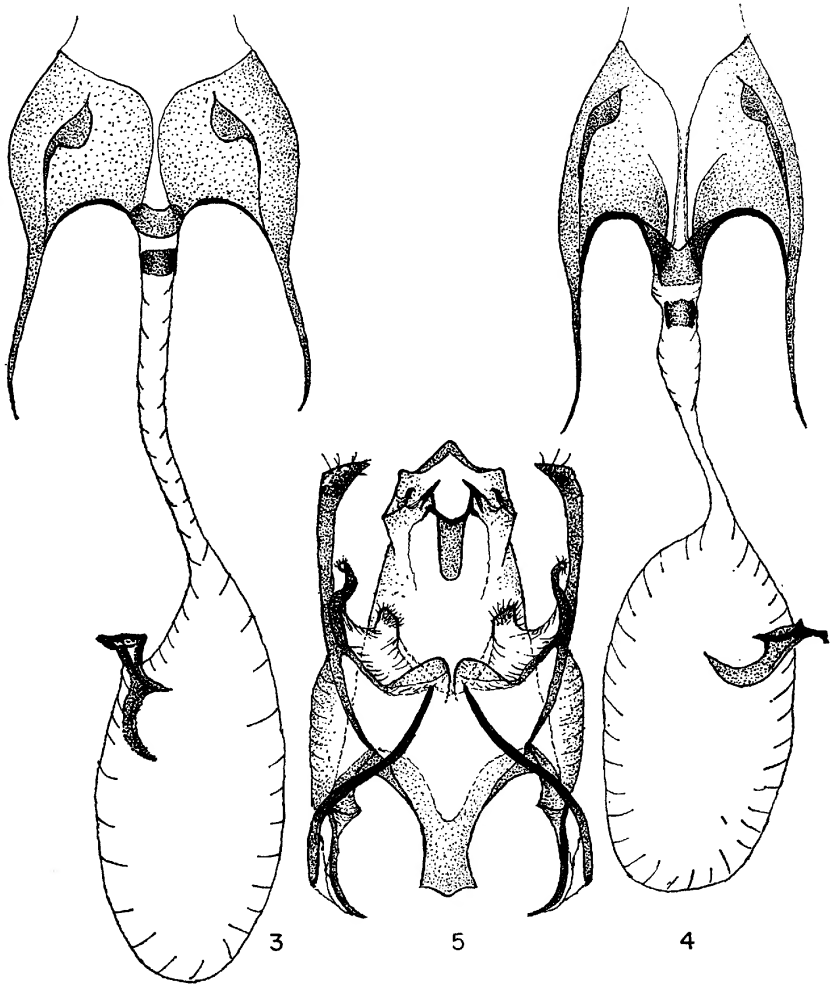
Gnorimoschema asterella, BRODIE, 1909, Canadian Ent., vol. 41, pp. 74, 158. (Doubts Kellicott's determination of food plant; states that *Solidago latifolia* Gray is the correct food plant.)

Gnorimoschema gallaeasterella, FYLES, 1911, Canadian Ent., vol. 43, p. 135.

There was considerable discussion at one time concerning the correct food plant of this species and also as to whether Busck was correct in listing *gallaediplopappi* Fyles (1890, Canadian Ent., vol. 22, p. 248), a gall maker on *Aster* (*Diplopappus*) *umbellatus*, as a synonym. This procedure was strongly contested by Fyles, but in spite of this Busck in his latest work on the group (1939) maintained the synonymy, adding the name *caesiella* Brodie (1909, *ibid.*, vol. 41, p. 158) to the further synonymy and misspelling the specific name as *gallaeasteriella*.

During the working over of considerable material in the Nova Scotia Museum, the question arose as to which of the two authors was correct. Our material consisted of a good series of specimens bred by myself on galls collected in a dry area on *Aster umbellatus* at White Point Beach, Queens County, and other specimens bred at Armdale, Halifax County, by D. Ferguson from galls on the same plant. These were all considered to be typical *gallaediplopappi* Fyles. They agreed with the rather sketchy original description with the exception of the color of the thorax, stated to be "reddish chocolate," but which in all our bred specimens proved to be white with the patagia edged on their inner sides by narrow dark lines.

At White Point Beach in 1954 the author collected a few *Gnorimoschema* specimens flying over small boggy areas in the vicinity. A search for galls produced several situated very low down on small plants of *Solidago uniligulata*, and from one of these an adult was reared which



FIGS. 3-5. Genitalia of *Gnorimoschema*. 3. *G. gallaeasterella* Kellicott, female. 4. *G. gallaediplopappi* Fyles, female. 5. *Gnorimoschema* species, close to *gallaediplopappi*, bred from *Solidago rugosa*, male, without aedeagus.

matched the collected specimens excellently. These specimens also agreed well with Kellicott's original figure of *gallaeasterella* and with Fyles's notes on the species (1911) and were therefore considered to belong to Kellicott's species.

A study of the genitalia of both these forms showed that, while in the very complicated male organs there were no satisfactory characters that could be used for specific differentiation, the female organs were dis-

similar and possessed characters that indicated definitely that two species were involved. Figures showing such differences are herewith given (figs. 3, 4).

As regards *caesiella* Brodie, the name (misspelled *ceasiella*) was proposed (1909, Canadian Ent., vol. 41, p. 158) for the species forming galls on *Solidago caesia*; as only a deformed adult was available which, according to Brodie, "somewhat resembled *G. asterella*" no further description was given. Cosens (1910, Canadian Ent., vol. 42, p. 372) records the breeding of adults from galls on both *S. latifolia* and *S. caesia*. The specimens were referred to Busck for identification, who stated that "the gall-moths bred from both *Solidago* species are without any dispute *G. asterella* Kell."

As no moths bred from galls on either of these solidagos are available for study, the matter must stand as indicated by Busck. It should, however, be pointed out that in 1951 from galls found on a small patch of *Solidago rugosa* in Point Pleasant Park, Halifax, four specimens were bred that in maculation of the forewings approached very closely to *gallaediplopappi*. The palpi, head, and thorax, however, lacked the pure white color of the aster-feeding species but showed considerable sprinkling of reddish brown atoms. In the genitalia of both sexes, no definite differences from those of *gallaediplopappi* could be noted. In spite of continuous searching in the following years, no further galls have been found, and it remains uncertain whether the name *caesiella* could be applied to this form or not. A figure of the male genitalia is given.

